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EXAMINER

TRAN, MY CHAU T

ART UNIT

PAPER NUMBER

1639

DATE MAILED: 10/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/763,674

Applicant(s)

HANNAH, ERIC C.

Examiner

MY-CHAU T. TRAN

Art Unit

1639

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-13 and 24-40 is/are pending in the application.
- 4a) Of the above claim(s) 27-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-13 and 24-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>1/22/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Application and Claims Status

1. Applicant's amendment and response filed 07/20/06 are acknowledged and entered. Claims 1-4 and 14-23 have been cancelled. Claims 24-40 have been added.

2. The preliminary amendment filed on 06/07/2004 wherein applicants amended the specification by correcting the priority claim, i.e. this instant application is a divisional of 09/991,610.

3. Claims 5-13 and 24-40 are pending.

Election/Restrictions

4. Claims 1-4, 14-23, and 27-40 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to *nonelected inventions*, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 07/20/2006. In addition, it is noted that applicant cancelled claims 1-4 and 14-23, and added new claims 27-40, which are drawn to *nonelected inventions*, i.e. methods claims.

5. Furthermore, since applicant has elected to prosecute the product claims (i.e. Group II: Claims 5-13 and new claims 24-26), applicants are advised that in accordance with the court decisions in *In re Ochiai*, 71 F.3d 1565, 37 USPQ2d 1127 (Fed. Cir. 1995), and *In re Brouwer*, 77 F.3d 422, 37 USPQ2d 1663 (Fed. Cir. 1996), in the event that the product claims (i.e. Group

Art Unit: 1639

II: Claims 5-13 and new claims 24-26) are found to be allowable, the method claims (i.e. New Claims 27-40) *which is of the same scope as the allowed product claim* may be rejoined with the allowed product claim.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained.

Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

6. Claims 5-13 and 24-26 are under consideration in this Office Action.

Claim Objections

7. Claim 25 is objected to because of the following informalities:

Claim 25 dependent of "*claim LAST*". It is unclear as to what "*claim LAST*" is in regard to the dependency of claim 25. However in order to further prosecution, claim 25 is interpreted to depend on claim 5.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 24-26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

A. Claim 24 recites the limitation of "*at least 256 probes distinguishably labeled with nanotubes*" regarding the instantly claimed library. This limitation, which extends the number of 'probe' range (i.e. the upper limit is 256, and no lower limit, which would include 1) of the instantly claimed library, is not supported by the originally filed specification and/or claims; nor has applicant provided any indication where such support exists. See 37 CFR 1.121 (b)(2)(iii), and the MPEP § 714.02, 3rd paragraph, last sentence; MPEP § 2163.02; and MPEP § 2163.06. For example, claim 5 recites the limitation of "*a library comprising two or more probes, each probe distinguishably labeled with at least one carbon nanotubes*", i.e. the number of 'probe'

Art Unit: 1639

has the range of two to infinity (lower limit is 2 and no upper limit). The originally filed specification discloses, “*a set of probes containing all 4096 or about 2000 non-complementary 6-mers, or all 16,384 or about 8,000 non-complementary 7-mers may be used*” (see specification pg. 14, paragraph [0053]). Consequently, the limitation of “*at least 256 probes distinguishably labeled with nanotubes*” has no specification or original claim support, and it is considered new matter. If applicants disagree, applicant should present a detailed analysis as to why the claimed subject matter has clear support in the originally filed specification and/or claims.

B. Claim 25 recites the limitation of “*the nanotubes of the 256 probes have distinguishable emission spectra*” regarding the instantly claimed library. This limitation, which limit the number of ‘probe’ to a specific number, i.e. 256, of the instantly claimed library, is not supported by the originally filed specification and/or claims; nor has applicant provided any indication where such support exists. See 37 CFR 1.121 (b)(2)(iii), and the MPEP § 714.02, 3rd paragraph, last sentence; MPEP § 2163.02; and MPEP § 2163.06. For example, the originally filed specification discloses, “*a set of probes containing all 4096 or about 2000 non-complementary 6-mers, or all 16,384 or about 8,000 non-complementary 7-mers may be used*” (see specification pg. 14, paragraph [0053]). Accordingly, the limitation of “*the nanotubes of the 256 probes have distinguishable emission spectra*” has no specification or original claim support, and it is considered new matter. If applicants disagree, applicant should present a detailed analysis as to why the claimed subject matter has clear support in the originally filed specification and/or claims.

C. Claim 26 recites the limitation of “*at least 1024 probes having distinguishable emission spectra*” regarding the instantly claimed library. This limitation, which extends the

Art Unit: 1639

number of 'probe' range (i.e. the upper limit is 1024, and no lower limit, which would include 1) of the instantly claimed library, is not supported by the originally filed specification and/or claims; nor has applicant provided any indication where such support exists. See 37 CFR 1.121 (b)(2)(iii), and the MPEP § 714.02, 3rd paragraph, last sentence; MPEP § 2163.02; and MPEP § 2163.06. For example, claim 5 recites the limitation of "*a library comprising two or more probes, each probe distinguishably labeled with at least one carbon nanotubes*", i.e. the number of 'probe' has the range of two to infinity (lower limit is 2 and no upper limit). The instant specification discloses, "*a set of probes containing all 4096 or about 2000 non-complementary 6-mers, or all 16,384 or about 8,000 non-complementary 7-mers may be used*" (see specification pg. 14, paragraph [0053]). As a result, the limitation of "*at least 1024 probes having distinguishable emission spectra*" has no specification or original claim support, and it is considered new matter. If applicants disagree, applicant should present a detailed analysis as to why the claimed subject matter has clear support in the originally filed specification and/or claims.

D. Claim 26 recites the limitation of "*at least 1024 probes having distinguishable emission spectra*" wherein it is interpreted that the instant claimed "*probes*" have the property/function of an emission spectra. This limitation is not supported by the originally filed specification and/or claims; nor has applicant provided any indication where such support exists. See 37 CFR 1.121 (b)(2)(iii), and the MPEP § 714.02, 3rd paragraph, last sentence; MPEP § 2163.02; and MPEP § 2163.06. For example, the originally filed specification discloses '*For example, an electron beam may excite electrons of a carbon nanotube label by coulombic induction, which may result in a fluorescent emission as an excited nanotube returns to its*

Art Unit: 1639

ground state', i.e. the emission spectra is the property/function of the carbon nanotube.

Therefore, the limitation of "*at least 1024 probes having distinguishable emission spectra*" has no specification or original claim support, and it is considered new matter. If applicants disagree, applicant should present a detailed analysis as to why the claimed subject matter has clear support in the originally filed specification and/or claims.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 24 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Both claims 24 and 25 recite the limitation "nanotubes" in line 1 and 2 respectively.

There is insufficient antecedent basis for this limitation in the claim 5. Claim 5 recites "carbon nanotube". Thus, claims 24 and 25 and all its dependent claims are rejected under 35 U.S.C. 112, second paragraph.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 1639

13. Claim 5 is rejected under 35 U.S.C. 102(b) as being anticipated by Fuhrhop et al. (*J. Am. Chem. Soc.*, 1993, 115(4), pgs. 1600-1601).

For *claim 5*, Fuhrhop et al. teach solid micellar rods and vesicular tubules (refers to instant claimed library) that are functionalized with amino acid head group (see e.g. pg. 1600, right col., lines 1-12; pg. 1601, figs. 1 and 2). The solid micellar rods and vesicular tubules comprise CH₂ chain (refers to instant claimed carbon nanotube)(see e.g. pg. 1601, left col., lines 33-40; pg. 1601, figs. 1 and 2). The amino head group includes D- and L-lysine or ornithine (refers to instant claimed two or more probes)(see e.g. pg. 1600, right col., lines 1-24). Therefore, the solid micellar rods and vesicular tubules of Fuhrhop et al. anticipate the presently claimed library.

14. Claims 5-13, 24, and 25 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Fisher et al. (WO 96/18,059).

For *claims 5, 6, 9, 24, and 25*, Fisher et al. teach graphic nanotubes (refers to instant claimed library) functionalized with a spectrum of functional groups (see e.g. Abstract; pg. 6, line 19 thru pg. 7, line 16; pg. 7, line 18 thru pg. 12, line 7). One type of functionalized graphic nanotubes includes the formula of $[C_nH_L]^+ A_m^-$ wherein A (refers to instant claim probe) is Y, Y includes functional group such as nucleotide, or oligonucleotide (refers to instant claim 6), m is 0.5n, and n is an integer (refers to instant claimed number of probes and instant claim 24 and 25)(see e.g. pg. 7, lines 18-22; pg. 9, line 26 thru pg. 10, line 16). The carbon atoms, C_n, are surface carbons of the graphic nanotubes. In addition, Fisher et al. disclose complex graphic

Art Unit: 1639

nanotubes wherein the graphic nanotubes are link to each other via the functional group (refers to instant claim 9)(see e.g. pg. 7, lines 4-7).

For *claims 6-8 and 10-13*, although Fisher et al. does not specifically disclose the length and the type of nucleotide sequences for the oligonucleotide, the oligonucleotide length and the type of nucleotide sequences constitute obvious variations in parameters which are routinely modified in the art as evidence by Andrus et al. (US Patent 4,816,571)(see col. 1, lines 20-35) and is considered within the purview of the cited prior art.

Alternatively, the claimed invention further differs from the prior art teachings only by the recitation of:

For *claim 25*, the limitations that '*the nanotubes of the 256 probes have distinguishable emission spectra*', i.e. the nanotubes have '*distinguishable emission spectra*', is interpreted as the functional limitation for the instantly carbon nanotubes. The claimed invention appears to be the same or obvious variations of the reference teachings, absent a showing of unobvious differences. The office does not have the facilities and resources to provide the factual evidence needed in order to determine and/or compare the specific activities of the instant versus the reference Fisher et al. In the absence of evidence to the contrary, the burden is upon the applicant to prove that the claimed composition is different from the one taught by prior art and to establish the patentable differences. See *in re Best* 562F.2d 1252, 195 USPQ 430 (CCPA 1977) and *Ex parte Gray* 10 USPQ2d 1922(PTO Bd. Pat. App. & Int. 1989). As a result, the graphic nanotubes of Fisher et al. would still anticipate the presently claimed carbon nanotube since it meets all the structural limitation of the claimed carbon nanotube of claim 5.

Therefore, the graphic nanotubes of Fisher et al. anticipate the presently claimed library.

Art Unit: 1639

Conclusion

15. No claims allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to My-Chau T. Tran whose telephone number is 571-272-0810. The examiner can normally be reached on Monday: 8:00-2:30; Tuesday-Thursday: 7:30-5:00; Friday: 8:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Paras, Jr., can be reached on 571-272-4517. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

My-Chau T. Tran
Patent Examiner
September 30, 2006

